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Barrens Restoration at Squannacook River Wildlife Management Area

The Squannacook River Wildlife Management Area (WMA) represents an opportunity to restore a significant group of fire-influenced natural communities. These habitats are often referred to as “barrens” and include Pitch Pine-Scrub Oak Woodland, Black Oak-Scarlet Oak Woodland, Open Oak Woodland, Inland Sandplain Heathland, and Inland Sandplain Grassland. These natural communities are classified as Priority Natural Communities by MassWildlife’s Natural Heritage and Endangered Species Program (NHESP) because they are imperiled or vulnerable. The barrens habitats currently range from high to low quality at Squannacook River WMA, and they are critical to over 46 wildlife and plant species identified in the MA State Wildlife Action Plan. Many of these species are also listed under the Massachusetts Endangered Species Act (MESA). Improving conditions for these declining or vulnerable animals and plants is a priority for MassWildlife. Restoration at this site will be coordinated and carried out by a team of biologists, restoration ecologists, foresters, and prescribed fire managers.

Barrens communities mostly occur on deposits of glacial sand and gravel. Barrens vegetation is adapted to poor soils and periodic fire. There is clear evidence that these natural communities once dominated large areas around the Squannacook River. And while they are currently in decline across the site, a core intact portion of these globally rare barrens communities remains, surrounded by areas with the components necessary for effective restoration. These disturbance-dependent communities require periodic disturbance events, in most cases fire, to keep them functioning at a high level.

Unfortunately, the majority of Squannacook River WMA is currently considered to be a disturbance *starved* system, and as a result, most of the barrens communities on the site are in severe decline. Generally, in the absence of disturbance such as fire, the characteristic open tree canopy of a barrens community begins to close and the dominance of fire-adapted vegetation is replaced by fast-growing non-fire-adapted generalist species including eastern white pine and red maple.

Squannacook River WMA barrens restoration will begin with a timber harvest to remove generalist tree species like white pine and red maple and a return to an open canopy habitat. Cutting trees will also stimulate the seed bank and promote growth of more specialized trees and shrubs. The next steps will include control of invasive plants and non-desirable vegetation through herbicides, mowing, and mulching. Once fuels build enough to carry fire, prescribed fire will be used to continue to restore and maintain these fire-adapted communities. Fire activities will be closely coordinated with NHESP staff to protect MESA-listed species. Before any prescribed fire occurs, a burn plan is developed in coordination with the local fire chief and all applicable permits such as air quality are obtained. All prescribed fires are conducted by highly trained personnel under direction of a qualified burn boss. Along with long-term maintenance of these communities using prescribed fire, continued ecological monitoring will occur for various plant and wildlife species including birds, moths, butterflies, pollinators, amphibians, and reptiles.

Visit [Mass.gov/Habitat](https://www.mass.gov/habitat) to learn more about how MassWildlife is Working for Wildlife.

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Squannacook River WMA Natural Community Restoration Project Map

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